

# **ASSESSING DEEPER LEARNING WITH THE NSSE: CAN ONLINE COMPETE WITH ONSITE LEARNING?**

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This study disaggregates the senior adult accelerated college experience to understand differences in learning outcomes by instructional format, specifically onsite versus online. Using the National Survey of Student Engagement (NSSE), outcomes are examined relating to critical thinking, as well as oral and written communication. The results suggest that while online accelerated seniors report engaging in behaviors making good use of technology and critical thinking assignments, they lack opportunities to engage in the development of oral communication skills. In contrast, onsite accelerated seniors report engaging in behaviors designed to facilitate oral communication skills, yet lack engagement in behaviors intended to improve critical thinking and real-world problem-solving. Implications for the classroom are then explored.

## **INTRODUCTION**

Various scholars have called for higher education to better reflect the changing realities of the 21<sup>st</sup> century, in which students must be prepared for life in an increasingly complex and diverse professional and personal world [Arum & Roksa, 2011; Hersh & Merrow, 2005; Taylor, 2010]. At the same time, employers are noting the urgent need for a workforce capable of thinking critically, solving complex problems, synthesizing and applying knowledge from across various disciplines, and communicating effectively in both oral and written forms [National Leadership Council, 2007].

A substantive change in higher education over the past several decades, which has attempted to address the needs of a changing economy and society, has been the development of the accelerated model of education. With an increasing number of adults

returning to universities to complete their degrees, such that at least 44% of U.S. undergraduate students are now working adults [Plageman & Sabina, 2010], universities have had to be sensitive to developmental and learning differences between young adults and individuals in middle and later adulthood, as well as to pragmatic differences in the lifestyles and responsibilities of these various age groups [Rawls & Hammons, 2012]. Modifications in the traditional model to better fit the adult learner include the lengthening of individual course sessions, fewer courses taken at one time, and the offering of courses within a shorter timeframe, with the result being less time required for the acquisition of a degree [Scott, 2003; Wlodkowski, 2003].

Even more recently, the modality of instruction within higher education has begun to change as well. An increasing number of courses and even entire programs of study are now offered online, rather than in a face-to-face or onsite format. The number of students enrolled in online classes has also increased. In 2002, for example, 9.6% of the total higher education enrollment was in online classes. That percentage grew to 31.3% by 2011 [Allen & Seaman, 2011]. Currently, more than six million students are enrolled in at least one online class [Kuruvilla, Norton, Chalasani, & Gee, 2012], with the growth rate for online, 12.9%, exceeding the growth rate of the overall college student population, 1.2% [Martin, 2012]. Such trends are not likely to reverse, but rather intensify over time [Abarashi, 2011; Robinson & Hullinger, 2008]. But is this new format as effective as or, alternatively, even more effective than the face-to-face format in helping students engage in the practices found to be critical in helping them achieve the learning outcomes needed in the 21<sup>st</sup> century?

The study presented herein examines differences that may exist in accelerated programs' onsite and online student engagement in activities promoting the achievement of learning outcomes. Two outcomes in particular are studied, critical thinking and oral and written communication. These outcomes were selected due to their relevance to an informed citizenry, as well as to private, public, and nonprofit industry sectors [Kuh, 2008; National Leadership Council, 2007; Rawls & Hammons, 2012]. Using data from the National Survey of Student Engagement ("NSSE"), a quantitative, single case analysis method is used to determine the extent to which online and onsite students in accelerated programs differ in their perceived engagement in behaviors relating to these outcomes. Implications for the classroom are then discussed.

## **LITERATURE REVIEW**

### **Definitions**

Online instruction involves the offering of classes to students who are not physically present with one other or with the instructor [Abarashi, 2011; Suarez-Brown, Grice, Turner, & Hankins, 2012]. Information is transmitted and individuals communicate through the use of technology such as computers and the web. If the communication occurs at times of one's own choosing, an online class is termed "asynchronous." If communication occurs in real time, the course is "synchronous" [Borokhovski, Tamim, Bernard, Abrami, & Sokolovskaya, 2012].

### **Benefits**

Online instruction has been touted as beneficial to both students and to institutions of higher education. For students, online courses allow those who cannot physically attend a class, due to distance, competing life demands, or other hindrances, to receive an education [Abarashi, 2011; Bozorgmanesh, 2011; Kim, Lee, & Shellenger, 2012; Means, Toyama, Murphy, & Baki, 2013]. Online classes can also offer time flexibility, in that asynchronous courses allow students to engage with class material during times of their own choosing [Bozorgmanesh, 2011; Crawford-Ferre & Wiest, 2012; Searls, 2012]. Additionally, online instruction has been argued to better expose students to individuals with differing cultures, experiences, and beliefs because students from across the globe may be enrolled in the same class [Abarashi, 2011; Mayes, Ku, Akarasriworn, Luebeck, & Korkmaz, 2011].

Online instruction can also be beneficial for the institutions of higher education utilizing it [Allen & Seaman, 2011]. Such courses can be offered at a reduced cost and even provide the institution with a profit [Crawford-Ferre & Wiest, 2012; Martin, 2012]. In addition, online education can allow institutions to capitalize on emerging market opportunities, as well as expand access to groups of students otherwise unable to participate in higher education [Kuruvilla, Norton, Chalasani, & Gee, 2012; Martin, 2012; Means, Toyama, Murphy, & Baki, 2013]. When resources are limited, online programs allow universities to more easily collaborate with other institutions, not just across town but across the globe [Kuruvilla, Norton, Chalasani, & Gee, 2012].

## **Concerns**

Online instruction is not without its criticisms, however. Concerns have been expressed, for example, that without self-discipline, the freedom of online instruction, particularly in courses offered asynchronously, results too easily in procrastination and eventual failure in the class [Abarashi, 2011; Bozorgmanesh, 2011]. A second concern involves the more isolated and impersonal nature of the instruction, including less accessibility to and interaction with the course instructor, negatively impacting both satisfaction and success in the course as well as inhibiting opportunities to develop and practice interpersonal communication skills [Abrashi, 2011; Kim, Lee, & Skellenger, 2012; Searls, 2012].

More fundamentally, concerns have been expressed about the quality of learning occurring in online classes [Callaway, 2012]. Research findings in this area have been mixed. For example, Bergstrand and Savage [2013] found that students felt they were treated with less respect and learned less in their online classes. Likewise, Fendler, Ruff, and Shrikhande [2011] found that online students did not develop the learning levels beyond knowledge and understanding (application, analysis, and synthesis) as well as did students in face-to-face sections of the same course. Baran, Correia, and Thompson [2011] also reported that the online classroom has not been found to develop higher-order thinking in students. They, however, attributed this problem less to the format itself and more to the use of traditional educational practices ill-suited for an online course. While the online students studied by Ke and Xie [2009] reported engaging in discussions demonstrating deep learning, these researchers too found a more superficial level of thinking when they examined the actual content of students' discussion posts.

On the other hand, Topper [2007], studying the products created in graduate education courses at one university, found no differences between those produced in online classes as compared to face-to-face. Similarly, Horspool and Lange [2012], as well as Brown [2012], found no differences among students in online and face-to-face classes with regard to perceived effectiveness of the learning format and with regard to student success as measured by course grades.

In contrast, Callaway [2012] found that online students were more satisfied than traditional students with the quality of their program and this satisfaction was positively correlated with the attainment of student learning outcomes as measured by grade point average. Likewise, when conducting a meta-analysis, Means, Toyama, Murphy, and Baki [2013] found that, on average, students in online classes performed modestly better than those in face-to-face classrooms, although blended classrooms produced the most robust learning outcomes. Chen, Lambert, and Guidry [2010] also found a positive relationship between the online format and student engagement, as well as student learning.

Using the NSSE, Robinson and Hullinger [2008] examined online student engagement in the areas of academic challenge, active and collaborative learning, student-faculty interaction, and enriching educational experience and found that online students, like traditional students, were modestly engaged in these NSSE dimensions. As compared to students in face-to-face formats, online students reported greater student-faculty interaction and more enriching educational experiences, yet less emphasis on speaking skills.

## **Present Study**

While not without their controversy, accelerated degree programs have nevertheless been argued by their proponents to be effective in achieving course, program, and institutional learning objectives [Husson & Kennedy, 2003; Wlodkowski, 2003]. Research investigating these claims, such as that conducted by Price and Baker [2012], Rawls and Hammons [2012] and Wyatt [2011], have found that not only can the accelerated format be as effective as the traditional model of higher education, it may at times be more so.

However, little research has examined the online instructional format when utilized within the accelerated model. Most typically, such research has focused instead upon traditional-aged students (those younger than 25 years) participating in the traditional model of higher education. This is a serious gap in our understanding of the online experience and its effectiveness in helping an ever-growing segment of the college population achieve the learning objectives of their programs and institutions. Using the National Survey of Student Engagement, the present study addresses this gap by examining whether or not online accelerated students differ in a significant way from their onsite accelerated peers in the same programs with regard to their engagement in activities promoting critical thinking and oral and written communication learning outcomes. Ramifications of these findings for the classroom are then explored.

## **METHOD**

The NSSE is a self-report measure which collects information annually from seniors and freshmen to assess student learning as indicated by student engagement [National Survey of Student Engagement, 2011]. Students completed the NSSE survey during the spring semester of 2011. The research study utilized 26 NSSE questions (Table 1) which were divided into two outcomes: 1) critical thinking and 2) oral and written communication. Independent analysis of each NSSE question was conducted on the 26 questions to determine if there were significant differences between the means. Since the population variance is unknown, t-tests were used to test for significance using a two-tailed test. The two samples were independent (a nontraditional student is enrolled in only one program – either online or onsite). An alpha level of .05 was selected for all statistical tests, and statistics were calculated using SPSS Version 21.

<b>Table 1: NSSE Items: Critical Thinking and Oral and Written Communication</b>
<b>Critical Thinking</b>
Asked questions in class or contributed to class discussions
Worked on a paper or project that required integrating ideas or information from various sources
Put together ideas or concepts from different courses when completing assignments or during class discussions
Discussed ideas from your reading or classes with faculty members outside of class
Discussed ideas from your reading or classes with others outside of class
Coursework emphasized memorizing facts, ideas, or methods from your courses and readings so you can repeat them in pretty much the same form
Coursework emphasized analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components
Coursework emphasized synthesizing and organizing ideas information, arguments or methods, such as examining how other gathered and interpreted data and assessing the soundness of their conclusions
Coursework emphasized making judgments about the value of information, arguments or methods, such as examining how others gathered and interpreted data



and assessing the soundness of their conclusions
Coursework emphasized applying theories or concepts to practical problems or in new situations
Examined the strengths and weaknesses of your own views on a topic or issue
Institutional contribution: Thinking critically and analytically
Institutional contribution: Analyzing quantitative problems
Institutional contribution: Solving complex real-world problems
<b>Oral and Written Communication</b>
Made a class presentation
Prepared two or more drafts of a paper
Used an electronic medium to discuss or complete an assignment
Used email to communicate with an instructor
Number of written papers or report of 20 pages or more
Number of written papers or report between 5 and 19 pages
Number of written papers or reports fewer than 5 pages
Institutional emphasis: Using computers in academic work
Institutional contribution: Writing clearly and effectively
Institutional contribution: Speaking clearly and effectively
Institutional contribution: Using computing and information technology
Institutional contribution: Working effectively with others

The research participants consisted of 1, 210 **nontraditional senior** students enrolled in two different instructional delivery modes, online and onsite, at one large, private university. The online seniors numbered 702, and there were 508 onsite seniors. Five programs constitute the population set, and each of the five program areas has both onsite and online formats.

Online senior adult students were nearly all full-time (95.5%). Only 10.3% had fathers and 8.9% had mothers who completed a bachelor's degree. Female students constituted 82% of the group. The average age was 39.2 with a standard deviation of 8.7, and nearly all were Caucasian (82%). African-Americans comprised 8.2% of the

population, and approximately 5% preferred not to respond to the question about ethnic background.

Onsite senior adult students were also nearly all full-time (94%). Only 11.6% had fathers and 9.6% had mothers who completed a bachelor's degree, and many of the students were female (73%). The average age was 41.7 with a standard deviation of 9.4, and most were Caucasian (69%). African-Americans were 20% of the onsite group and, once again, 5% preferred not to respond to the question about ethnic background.

## RESULTS

If one posits that online and onsite nontraditional education is equally beneficially, several observations can be made from the statistical differences of the two outcomes studied.

Critical Thinking. Of the 14 NSSE questions relating to critical thinking, only five questions were significantly different. These questions are noted in Table 2.

<b>Item</b>	<b>Mean Higher For</b>	<b>P value</b>
Discussed ideas from your readings or classes with faculty members outside of classes	Onsite Seniors	< .001
Coursework emphasized analyzing the basic elements of an idea, experience or theory	Online Senior	<.01
Institutional Contribution: Thinking Critically and analytically	Online Senior	<.01
Institutional Contribution: Analyzing quantitative problems	Online Senior	<.01
Institutional Contribution: Solving complex real-world problems	Online Senior	<.001

For 64% of the questions, both delivery modes have no statistical differences. This percentage is good as a majority of items are not showing any difference in engagement. However, for 29% of the questions, online nontraditional seniors are showing a statistical difference for being involved in a program of study which is requiring greater emphasis and engagement with critical thinking.

Oral and Written Communication. When researching the oral and written communication outcome, many more statistical differences were found. With the 12 NSSE items, 9 questions (75%) were statistically significant. Table 3 highlights these findings. Within this outcome, some noticeable trends appear. The first observation relates to questions concerning oral communication (speaking). Online programs are not engaging their students in these activities at the rate of onsite programs. The second finding pertains to the nature of the online program. For those communication questions involving computers and technology, online programs are showing high engagement with 80% of significant differences relating to this behavior. This trend is to be expected given the nature of the instructional delivery. The third trend concerns writing, specifically the writing of papers. Based on the evidence in Table 3, onsite seniors are engaging in writing longer papers (5+ pages) and online are writing very short papers (less than 5 pages).

<b>Item</b>	<b>Mean Higher For</b>	<b>P value</b>
Made a class presentation	Onsite Seniors	<.001
Used an electronic medium to discuss or complete an assignment	Online Seniors	<.001

Used email to communicate with an instructor	Online Seniors	<.05
Number of written papers or report of 20 pages or more	Onsite Seniors	<.001
Number of written papers or report between 5 and 19 pages	Onsite Seniors	<.01
Number of written papers or reports fewer than 5 pages	Online Seniors	<.01
Institutional emphasis: Using computers in academic work	Online Seniors	<.001
Institutional contribution: Speaking clearly and effectively	Onsite Seniors	<.001
Institutional contribution: Using computing and information technology	Online Seniors	<.001

## DISCUSSION

In order for both online and onsite nontraditional programs to improve student learning, several suggestions are in order. First, in reference to the critical thinking outcome, online nontraditional programs seem to have a robust set of assignments which are causing seniors to report higher levels of engagement. Thus, the onsite program faculty need to reflect on the online programs' senior assignments. Questions to ponder include: 1) Are the assignments' requirements better able to capture greater critical thinking opportunities and engagement? 2) Are the assignments themselves vastly different in the online programs as to capture critical thinking? 3) Are the online programs more intentional about the critical thinking outcome so as to persuade the seniors to recognize critical thinking in their assignments? Or 4) as other researchers have suggested, are the online students more motivated and self-directed as required by successful use of the online learning format [Mayes, Ku, Akarasriworn, Luebeck, & Korkmaz, 2011]? If this is the case, how do onsite faculty help their onsite nontraditional

students to achieve greater motivation and self-direction? These questions would be important to research as onsite programs review their senior course assignments.

Next, two significantly different critical thinking outcomes require greater scrutiny. The first statement is “Discussed ideas from your readings or classes with faculty members outside of classes.” Online programs need to rethink engagement with faculty since their students are not discussing ideas with faculty outside of class. How is online posting, blogging, e-mailing, and chatting taking place within the course context? Are online students encouraged to engage in these activities by themselves with the professor so that feelings of disconnectedness and isolation are reduced [Mayes, Ku, Akarasriworn, Luebeck, & Korkmaz, 2011]? Or is this question worded inappropriately on the NSSE survey instrument, since typically there is no “outside of class” time with online programs? Regardless, it is important for online faculty to encourage informal interaction and discussion of ideas with students. This sort of interaction could be performed with Skype or synchronous chatting at a variety of times throughout the semester.

The second NSSE item requiring greater scrutiny is that of “Institutional Contribution: Solving complex real-world problems.” This ability is an important one for the onsite programs to reevaluate since they scored significantly lower on this item. As assessment has matured in the U.S. many senior onsite programs began to use capstone-based instruction. In these capstone classes, are the assignments constructed to provide complex real-world problems? If not, why is that the case? If so, are onsite students shown the connections between the capstone projects and their real-life

applicability? Again, is this a course assignment construction issue or a communication issue which makes connections between real-life applicability and class content?

Oral and written outcome differences are also important to review, with 72% of the NSSE items significant and many with higher degrees of significance ( $p < .001$ ). As would be expected, those items relating to email or electronic forms of communication are higher for the online seniors. These items represent 80% of the online significant NSSE items. Yet, the onsite programs cannot excuse these NSSE items so quickly. Onsite programs do have strength in the personal face-to-face approach to communication. However, more robust onsite courses incorporate technological components in class. One cannot escape the abundance of electronic communication in the workforce. Thus, onsite courses need to incorporate both face-to-face and technology in course communication.

In addition, NSSE items relating to oral communication must be examined for the online program. As noted in Table 3, the online programs are not engaging in these activities as the onsite seniors are, supporting concerns expressed in the literature [Abrashi, 2011; Kim, Lee, & Skellenger, 2012; Robinson and Hullinger, 2008; Searls, 2012]. At some level, this makes sense because online instruction is nearly all in written form. However, because oral communication is a high demand skill, this finding is also very disconcerting. For online programs to be taken seriously they must include oral communication aspects. For example, Skype could be used to conduct oral examinations or speeches. Oral communication is a necessity and was reported as the number one soft skill required by employers on the National Association of Colleges and Employers Job

Outlook 2013 survey [National Association of Colleges and Employers, 2012]. The value of oral communication in business cannot be underestimated, with profits depending on a high quality of customer interaction, persuasions skills in sales, and leader and follower collaboration to promote a satisfied and engaged workforce. Online programs must explore ways to incorporate oral communication requirements.

With written communication, both programs have significant differences with the NSSE items. The onsite and online modalities seem to be engaging in writing assignments which are pertinent to each group. However, the authors would caution each to evaluate the writing assignments as to the goals and outcomes most desired in their courses. When longer papers are used as a pedagogical technique, the literature finds that greater critical thinking and complex reasoning occurs [Arum & Roksa, 2011; Kuh, 2008]. All of these skills, written communication, critical thinking, and complex reasoning, are highly desired by employers who also believe that college graduates are not well prepared to engage in these behaviors [Kuh, 2008].

### **Limitations and Future Research**

There are several limitations to this study, including the potential for a Type I error when using t-tests with large samples [Duffy, 2010]. Additionally, the NSSE measures only perceptions of behavior, not the actual behavior themselves [Porter, Rumann, & Pontius, 2011]. As Ke and Xie [2009] found in their research, perceptions and actual behavior may not be congruent. Finally, the demographics of the respondents

are heavily skewed toward Caucasian, particularly for the online students, and thus they are not representative of the general population of adult learners [Sandmann, 2010].

To address these issues, and further our understanding of the online experience for students in accelerated programs, measurement of behaviors would be useful to ascertain the extent to which students actually engage in the behaviors they report. Additionally, a more diverse pool of respondents would be useful to ascertain the extent to which the online experience produces the desired learning outcomes across various subgroups of students.

## **CONCLUSION**

The study presented herein examined the extent to which online accelerated programs compare to onsite accelerated education with regard to student engagement in activities promoting the achievement of learning outcomes. The concomitant growth of accelerated adult programs and online instructional delivery means that such research is crucial, as these instructional formats are increasingly dominating higher education. To be accountable to their immediate constituency as well as to larger society, universities must know if they are effectively preparing their students, regardless of the format in which those students are receiving an education, for a world in which critical thinking, problem-solving, and effective communication are more important than ever before [National Leadership Council, 2007].



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